

**CUSTOMER NO. 46900**

**PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re: Attorney Docket No. A2550.0113/P113 A

In re application of: Martin Laurence Green and Lalita Manchanda

Serial No.: 10/718,536

Group Art Unit: 2813

Filed: 11/24/2003

Examiner: Schillinger, Laura M.

Matter No.: 992,1208

Phone No.: 571-272-1697

For: High K Dielectric Material and Method of Making a High K Dielectric Material

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Applicants request review of the final rejection in the above-identified application. No amendments are being filed with this request. This request is being filed with a notice of appeal. The review is requested for the reasons stated in the following Remarks section.

**REMARKS**

Claims 13-16, 19, 21, and 27-29 are pending in the application. The Applicants hereby request further examination and reconsideration of the application in view of these remarks.

Claims 13-19, 21, and 27-29 are rejected under 35 U.S.C. § 102(b) as being anticipated by Budd.

Attempts by the Applicants' attorney Yuri Gruzdikov to arrange a telephonic interview with the Examiner had been unsuccessful. The Examiner was willing to answer "specific questions" but was not willing to grant a telephonic interview for a full discussion of the substance of the rejections.

For the following reasons, the Applicants submit that all claims are allowable over Budd.

Claim 13 is directed to a method of fabricating a dielectric material having the step of incorporating a Group V element in a Group III metal oxide. The dielectric material is deposited in an **atmosphere** comprising a mixture of oxygen and nitrogen having an oxygen-to-nitrogen ratio ranging from about 24:6 to about 18:12.

Budd discloses a method of making electroluminescent phosphor particles coated with a layer of metal oxynitride to reduce sensitivity to humidity-accelerated decay (col. 2, lines 29-37). Since the phosphor particles are being made for use in flat panel displays, cathode ray tubes, and/or fluorescent lighting fixtures (col. 1, lines 18-28), it is essential that the oxynitride coating be transparent to the visible light emitted by the phosphor (col. 4, lines 30-32). To achieve adequate transparency for the oxynitride coating, Budd recommends that "The nitrogen to oxygen molar **ratio of the oxynitride coating** [be] preferably in the range of about 4:1 to about 1:4, most preferably

about 3 or 2:1 to about 1:2 or 3, and even more preferably near about 1:1” (emphasis added, see col. 4, lines 33-37). It is clear therefore that Budd discloses those specific oxygen-to-nitrogen ratios for the **coating**, and **not** for the **atmosphere** used during the coating process. In contrast, claim 13 recites specific oxygen-to-nitrogen ratios for the atmosphere used for the deposition of the dielectric material, and not the oxygen-to-nitrogen ratios for the dielectric material itself.

On page 4 of the final office action, the Examiner stated that:

Such an argument is not persuasive because [of the following points]:

- 1) budd teaches that the atmosphere includes the ratios in Tables 1-3
- 2) budd teaches that the atmosphere would be tailored to create the O/N layer with the desired ratio
- 3) lastly the Examiner cannot understand how the atmosphere to form a O/N layer could be any different from the resulting O/N coating - such an element is inherent.

Each of these Examiner’s points is addressed below.

Regarding the first Examiner’s point, the Applicants submit that, of Budd’s Tables 1-3, only Table 1 is relevant to the subject matter of claim 13, whereas Tables 2-3 are irrelevant and, as such, cannot be properly used in the rejection of that claim. More specifically, Budd’s Tables 2-3 are irrelevant because each of those tables provides parameters for a process of forming **silicon oxynitride** coatings or, using the terminology of claim 13, a process having the step of incorporating a **Group IV** element (i.e., the silicon) in a Group III oxide. In contrast, claim 13 is directed to a method having the step of incorporating a **Group V (not Group IV)** element in a Group III oxide.

Budd’s Table 1 provides flow rates in sccm (standard cubic centimeters per minute) for three gaseous reagents: aluminum chloride (the table’s column 3), ammonia (the table’s column 4), and air (the table’s column 5). Note that the table’s column 9 (the last column) gives N/O ratios in the resulting solid coating and not in the gas phase. Using the data of columns 4 and 5 and the fact that air has about 78% of N<sub>2</sub> and about 22% of O<sub>2</sub>, one can convert the flow rates of Budd’s Table 1 into N/O ratios in the gas phase. Since Examples 1-3 of Budd’s Table 1 have zeros in the air column and no other source of gaseous oxygen is specified, the corresponding N/O ratios are indefinitely large. For Examples 4-6 of Budd’s Table 1, the N/O ratios are about 122.8, 24.6, and 24.7, respectively. These N/O ratios are far outside of the range specified in claim 13 (which is between about 0.25 and about 0.67). It is therefore clear that Budd’s Table 1 does not teach the atmosphere ratios recited in claim 13 and its use in the rejection of that claim is improper.

Regarding the second Examiner’s point, the Applicants first note that the second Examiner’s point appears to be hinting at some sort of an obviousness-type argument. However, the rejection being made by the Examiner is an anticipation-type rejection under 35 U.S.C. § 102, and **not** an obviousness-type rejection under 35 U.S.C. § 103. It is therefore submitted that the Examiner’s second point has no bearing on the patentability analysis within the framework of 35 U.S.C. § 102 and, as such, is improper. If the Examiner chooses to make a rejection of claim 13 under 35 U.S.C. § 103 in a future office action, then the Applicants expect to see a full obviousness analysis under the guidelines set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966).

Regarding the third Examiner’s point, the Applicants would like to direct the Examiner’s attention, e.g., to any basic textbook on chemical vapor deposition. It is well known that, more often than not, the chemical composition of a film that is being deposited is **very** different from the chemical composition of the gas mixture that is being used in the deposition process. Some of the reasons for that difference include, but are not limited to (i) different adsorption coefficients or adsorption rates for different gaseous reactants, (ii) the reaction stoichiometry, which can result in

a reactant-to-product ratio other than 1-to-1, and (iii) the reaction kinetics, which tends to favor the faster-forming products over the slower-forming ones. Furthermore, even Budd's Table 1 contains information of that nature. More specifically, Example 6 of Budd's Table 1 specifies that the N/O ratio in the gas phase is about 24.7 (see the explanation above) whereas the N/O ratio in the resulting coating is 2:3 (or about 0.67). The Applicants submit that the third Examiner's point is simply an admission about the Examiner's subjective knowledge, which cannot serve as a proper ground of rejection, notwithstanding the Examiner's assertion to the contrary.

For all these reasons, the Applicants submit that the Examiner misinterpreted the teachings of Budd and used them improperly to reject claim 13. It is therefore submitted that the rejection of claim 13 over Budd should be withdrawn and that claim 13 is allowable over Budd. Since claims 14-16, 19, 21, and 27-29 depend variously from claim 13, it is further submitted that those claims are also allowable over Budd. The Applicants submit therefore that the rejections of claims under § 102 have been overcome.

In view of the above remarks, the Applicants believe that all pending claims are in condition for allowance. Therefore, the Applicants believe that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

#### Fees:

During the pendency of this application, the Commissioner for Patents is hereby authorized to charge payment of any filing fees for presentation of extra claims under 37 CFR 1.16 and any patent application processing fees under 37 CFR 1.17 or credit any overpayment to Mendelsohn & Associates, P.C. Deposit Account No. 50-0782.

The Commissioner for Patents is hereby authorized to treat any concurrent or future reply, requiring a petition for extension of time under 37 CFR § 1.136 for its timely submission, as incorporating a petition for extension of time for the appropriate length of time if not submitted with the reply.

Respectfully submitted,

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